

BLUE

Date: Wednesday, 5/16/2007 8:13:18 AM
User: Kim Johnston

Process Sheet

SPLIT-2 23

Customer : CU-DAR001 Dart Helicopters Services
Job Number : 32374
Estimate Number : 11058
P.O. Number : N/A
This Issue : 5/16/2007 S.O. No. : N/A
Prsht Rev. : NC
First Issue : N/A Type : PURCHASED PARTS
Previous Run : 28389
Drawing Name : 02.500 SUPPORT
Part Number : D28921
Drawing Number : D2892 REV A
Project Number : N/A
Drawing Revision : A
Material : N/A
Due Date : 6/5/2007 Qty: 16 Um: Each
Written By :
Checked & Approved By :
Comment : Est. C 02.11.26 Added P/O KJ

Additional Product

Job Number: 

Seq. #: Machine Or Operation: Description :

1.0 PG PURCHASING



Comment: PURCHASING

Issue P/O: 3795

Description: D6104-003

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

Blank size makes (2) D2891-1

2.0 D6104003 17-4 SS Roundbar 3.25"OD



Comment: Qty.: 1.0000 Each(s)/Unit Total : 16.0000 Each(s)
Support

3.0 PACKAGING 1 PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Recieve & Inspect for Transit Damage

Ensure Material Release Note is attached

4.0 MORI SEIKI MORI SEIKI CMC LATHE LARGE



Comment: MORI SEIKI LATHE

Turn blank for Haas as per Folio FA082

5.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: PD Date: 07/09/12
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/04/13 JF	4.0	#1 support. Diameter of 2.524/2.529 was too small. Try to repeast but come to big of 2.541.	IP 07.09.20 per QSI 042	Acceptable to open bore up to 2.541 2.541 MAX. SEE DS EMAIL.	<i>[Signature]</i> 07/09/15	En 07/09/17 X3	CP 07.09.20 per QSI 042	En 07/09/17
		#2 support. Dia 2.524/2.529 was 2.533 and the support was too short	IP 07.09.17 per QSI 042	AS per DS EMAIL		En 07/09/17	CP 07.09.17 per QSI 042	En 07/09/17
		#4 support: Too short the dia. max of 2.524/2.529 was too big 2.531 #7 support: the dia of 2.529 was 2.530	IP 07.09.17 per QSI 042	AS per DS Email		En 07/09/17	CP 07.09.17 per QSI 042	En 07/09/17

NOTE: Date & initial all entries

Date: Wednesday, 6/16/2007 8:13:18 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.500 SUPPORT

Job Number: 32374

Part Number: D28921

Job Number:



Seq. #:

Machine Or Operation:

Description:

6.0

HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: HAAS

Machine as per Folio FA082

Tumble & Deburr

ml/J.F.

07/07/05

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

ml

07/07/05

(6)

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

07-09-17
07/12

9.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

-PRIME

-PAINT DELFLEET BLUE

-CLEAR DELFLEET

P/O: 4630 06/09/00

(12)

07/12/04

10.0

QC14

INSPECT SPRAY PAINT



Comment: INSPECT SPRAY PAINT

6

07/09/04

(x6 sets)

counters

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: _____

07/09/04

(12)

12.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

07/09/05

Job Completion



U 07/09/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 32374
Description: Ø2.500 Support		Part Number: D2892-1
Inspection Dwg: D2892 Rev. A		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2892 Rev. A/DSK077 Rev. A and record below:

				Recorded Actual Dimensions				By	Date
Dim	Min	Max	Go/No Go Gauge	1 ✓	2 ✓	3 ✓	4 ✓		
Lathe Section									
A	2.524	2.529		2.533	2.533	2.527	2.530		
B	3.702	3.722		2.717	2.700	2.718	2.690		
C	2.814	2.834		2.830	2.830	2.830	2.830		
D	0.718	0.738		.727	.727	.727	.727		
E	0.090	0.110		.097	.097	.091	.100		
F	2.714	2.734		2.726	2.726	2.727	2.727		
G	2.029	2.049		2.033	2.041	2.030	2.030		
H	3.214	3.234		3.226	3.226	3.232	3.228		
I	0.913	0.933		.920	.920	.920	.920		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.096	.096	.094	.095		
L									
HAAS Section									
AA	0.115	0.135		0.134	0.134	0.133	0.134		
AB	0.290	0.310		0.303	0.305	0.305	0.305		
AC	0.040	0.060		0.051	0.052	0.052	0.052		
AD	0.115	0.135		0.128	0.128	0.128	0.128		
AE	0.240	0.260		0.252	0.255	0.251	0.253		
AF	0.188	0.193	DT8706	0.188	0.189	0.188	0.188		
AG	0.240	0.260		0.250	0.250	0.250	0.250		
AH	1.126	1.146		1.145	1.142	1.142	1.146		
AI	0.454	0.474		0.462	0.46	0.467	0.446		
AJ	0.240	0.260		0.250	0.250	0.250	0.250		
AK	0.053	0.073		0.063	0.063	0.063	0.063		
AL	0.257	0.262	DT8683	0.258	0.258	0.258	0.258		
AM	1.663	1.683		1.675	1.663	1.683	1.658		
AN	0.053	0.073		0.063	0.063	0.063	0.063		
AO	0.022	0.042		0.032	0.032	0.032	0.032		
AP	2.779	2.789		2.784	2.783	2.785	2.784		
AQ				OK	OK	OK	OK		
AR									
Accept/Reject									

Measured by: J.S. ml
Date: 07/24/12 07/04/16

Audited by: [Signature]
Date: 10-10-09-17

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	[Signature]

DART AEROSPACE LTD	Work Order: 32374
Description: Ø2.500 Support	Part Number: D2892-1
Inspection Dwg: D2892 Rev. A	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2892 Rev. A/DSK077 Rev. A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				5	6	7	8		
Lathe Section									
A	2.524	2.529		2.524	2.526	2.530	2.529		
B	3.702	3.722		3.703	3.710	3.709	3.710		
C	2.814	2.834		2.827	2.826	2.826	2.826		
D	0.718	0.738		.727	.732	.732	.730		
E	0.090	0.110		.095	.095	.095	.098		
F	2.714	2.734		2.728	2.724	2.728	2.726		
G	2.029	2.049		2.037	2.037	2.038	2.040		
H	3.214	3.234		3.227	3.227	3.227	3.226		
I	0.913	0.933		.925	.920	.920	.920		
J	0.022	0.042		.032	.032	.032	0.032		
K	0.090	0.110		.104	.103	.104	.095		
L									
HAAS Section									
AA	0.115	0.135		.132"	0.133	.132"	.132"		
AB	0.290	0.310		.300"	0.305	.300"	.300"		
AC	0.040	0.060		.044"	0.045	.050"	.044"		
AD	0.115	0.135		.125"	0.128	.127"	.125"		
AE	0.240	0.260		.250"	0.249	.245"	.245"		
AF	0.188	0.193	DT8706	Ø.188"	0.188	Ø.188"	Ø.188"		
AG	0.240	0.260		A.250"	0.250	B.250"	A.250"		
AH	1.126	1.146		1.146"	1.146	1.146"	1.142"		
AI	0.454	0.474		.464"	0.465	.463"	.464"		
AJ	0.240	0.260		A.250"	0.250	A.250"	A.250"		
AK	0.053	0.073		A.053"	0.063	A.063"	A.053"		
AL	0.257	0.262	DT8683	Ø.257"	0.258	Ø.257"	Ø.257"		
AM	1.663	1.683		1.666"	1.673	1.676"	1.671"		
AN	0.053	0.073		A.063"	0.063	B.063"	A.063"		
AO	0.022	0.042		A.032"	0.032	A.032"	A.032"		
AP	2.779	2.789		2.788"	2.785	2.788"	2.788"		
AQ									
AR									
Accept/Reject									

Measured by: J.F. / J.F.	Audited by: J.F. / J.F.
Date: 07/06/18 07/07/15	Date: 07/07-09-19

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	J.F.

DART AEROSPACE LTD	Work Order: 32374
Description: Ø2.500 Support	Part Number: D2892-1
Inspection Dwg: D2892 Rev. A	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2892 Rev. A/DSK077 Rev. A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	9 ✓	10 ✓	11 ✓	12 ✓	By	Date
Lathe Section									
A	2.524	2.529		2.528	2.529	2.530	2.527		
B	3.702	3.722		3.710	3.709	3.707	3.704		
C	2.814	2.834		2.827	2.826	2.832	2.830		
D	0.718	0.738		.728	.738	.733	.735		
E	0.090	0.110		.100	.099	.098	.095		
F	2.714	2.734		2.727	2.727	2.727	2.727		
G	2.029	2.049		2.035	2.044	2.036	2.034		
H	3.214	3.234		3.228	3.226	3.228	3.229		
I	0.913	0.933		.930	.925	.920	.920		
J	0.022	0.042		.032	.032	.032	.032		
K	0.090	0.110		.101	.101	.101	.098		
L									
HAAS Section									
AA	0.115	0.135		.133"	.133"		.132"		
AB	0.290	0.310		.300"	.300"		.300"		
AC	0.040	0.060		0.053	.042"		.051"		
AD	0.115	0.135		0.129	.127"		.126"		
AE	0.240	0.260		0.249	.251"		.250"		
AF	0.188	0.193	DT8706	0.188	Ø.189"		Ø.189"		
AG	0.240	0.260		0.250	Ø.250"		Ø.250"		
AH	1.126	1.146		1.140	1.145"		1.146"		
AI	0.454	0.474		0.459	.464"		.463"		
AJ	0.240	0.260		0.250	Ø.250"		Ø.250"		
AK	0.053	0.073		0.063	.053"		.053"		
AL	0.257	0.262	DT8683	0.258	Ø.257"		Ø.258"		
AM	1.663	1.683		1.673	1.671"		1.670"		
AN	0.053	0.073		0.063	Ø.063"		Ø.063"		
AO	0.022	0.042		0.032	Ø.032"		Ø.032"		
AP	2.779	2.789		2.784	2.788"		2.788"		
AQ				2nd					
AR									
Accept/Reject									

Measured by: J.F. 10/11	Audited by:
Date: 07/06/11 07/07/05	Date:

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	

DART AEROSPACE LTD	Work Order: 32374
Description: Ø2.500 Support	Part Number: D2892-1
Inspection Dwg: D2892 Rev. A	Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2892 Rev. A/DSK077 Rev. A and record below:

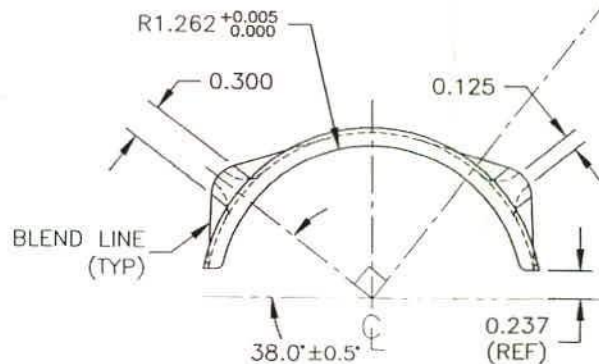
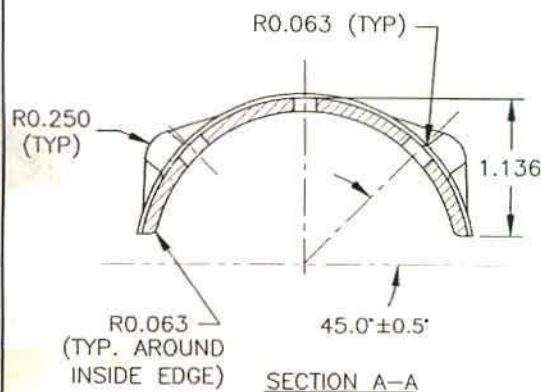
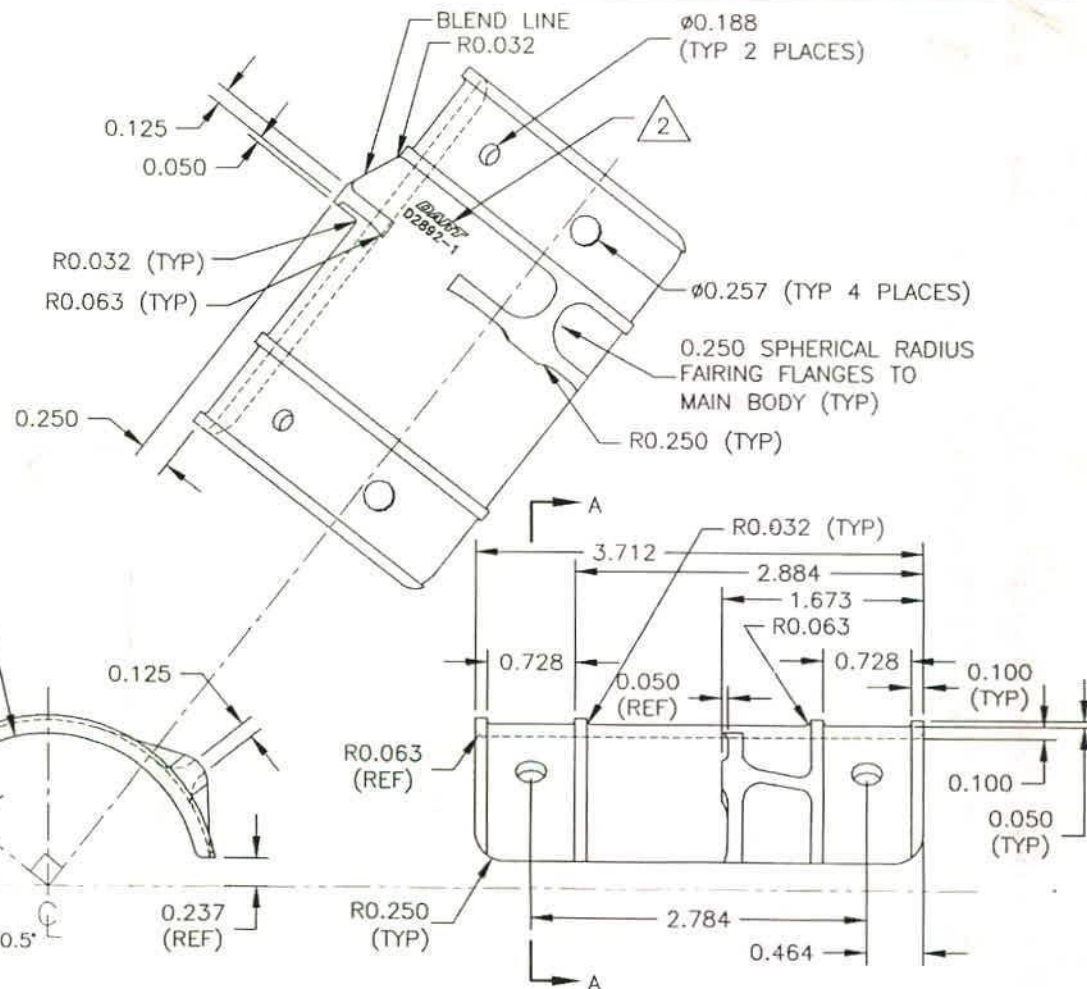
Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				1	2	3	4		
Lathe Section									
A	2.524	2.529	2.528	2.528					
B	3.702	3.722	3.704	3.704					
C	2.814	2.834	2.824	2.824					
D	0.718	0.738	0.720	0.720					
E	0.090	0.110	0.095	0.095					
F	2.714	2.734	2.722	2.722					
G	2.029	2.049	2.039	2.039					
H	3.214	3.234	3.224	3.224					
I	0.913	0.933	0.920	0.920					
J	0.022	0.042	0.032	0.032					
K	0.090	0.110	0.095	0.095					
L									
HAAS Section									
AA	0.115	0.135		0.132"					
AB	0.290	0.310		0.300"					
AC	0.040	0.060		0.049"					
AD	0.115	0.135		0.125"					
AE	0.240	0.260		0.250"					
AF	0.188	0.193	DT8706	0.188"					
AG	0.240	0.260		0.250"					
AH	1.126	1.146		1.192"					
AI	0.454	0.474		0.463"					
AJ	0.240	0.260		0.250"					
AK	0.053	0.073		0.063"					
AL	0.257	0.262	DT8683	0.258"					
AM	1.663	1.683		1.670"					
AN	0.053	0.073		0.063"					
AO	0.022	0.042		0.032"					
AP	2.779	2.789		2.787"					
AQ									
AR									
Accept/Reject									

Measured by: J.F.	Audited by:
Date: 07/06/14	Date:

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	

D2892-1

- 1) MATERIAL: 17-4 PH STAINLESS STEEL
HEAT TREAT TO H900 CONDITION
(900°F FOR 1 HR, AIR COOL)
MIN UTS = 170 KSI (38 HRC)
- 2) IDENTIFY WITH DART LOGO (PER DART SUPPLIED GRAPHIC) AND PART NUMBER IN THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 018 (REF. X.XXX = ± 0.010) UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3



A		00.11.17	NEW ISSUE
DESIGN	CP	DRAWN BY	CP
CHECKED	#	APPROVED	#
DATE	00.11.17	DRAWING NO.	D2892
		TITLE	Ø2.500 SUPPORT
		REV. A	SHEET 1 OF 1
		SCALE	1:1

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DART

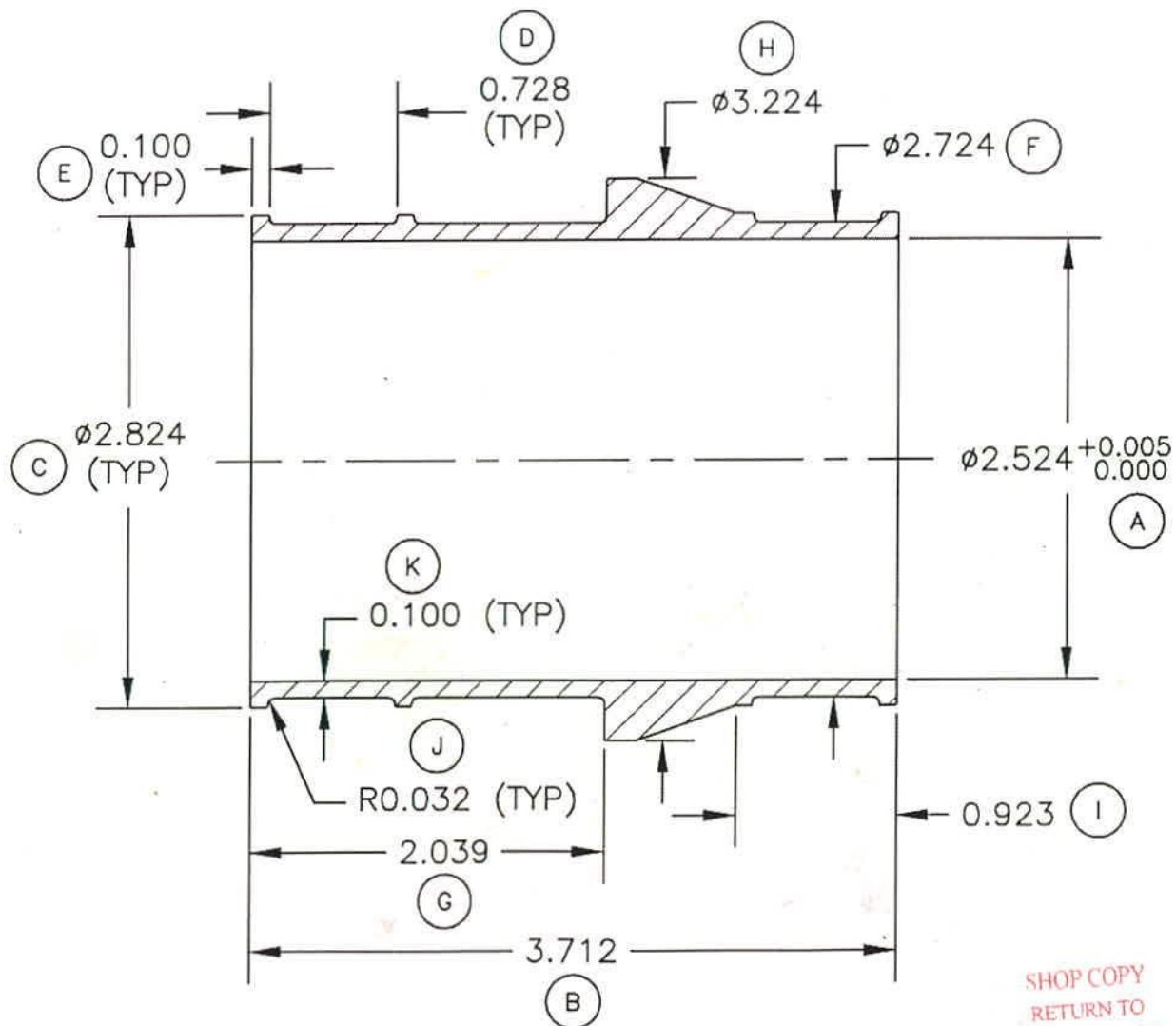
DART AEROSPACE LTD.

HARRISBURG, ONTARIO, CANADA

NO. 52374
 WORK ORDER
 WITHOUT NOTICE
 SUBJECT TO AMENDMENT
 UNCONTROLLED COPY
 ENGINEERING
 RETURN TO
 SHOP COPY

DART

DESIGN H	DRAWN BY H	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED H	APPROVED H	DRAWING NO. DSK 077	REV. A SHEET 1 OF 1
DATE 03.05.20		TITLE TURNING DETAIL FOR D2892-1	SCALE 1:1
A	03.05.20	NEW ISSUE	

RELEASED
03.07.01 H

D2892-1 TURNING DETAIL

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WITHOUT NOTICE
WORK ORDER
NO. 32374

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1 552292 931733 01		Métaux Castle		A.M. CASTLE & Co. (Canada) Inc.		EXPÉDIÉ 28 MAR 2007	
EQUISITION CLIENT-CUSTOMER REQUISITION NO.		NO. COM. CLIENT-CUST. ORD. NO. 3795		COMPTES-ACCT. VEND. SLS TERR. EXPÉDIÉ PAR-SHIP VIA 91037 200 40 CABANO (PPD)			
TEUR-PURCHASING AGENT INDA LACELLE		TELEPHONE 613 632-3336		H/C TAXE NO. COM ORD 9 0 1	REGION LIVRAISON-DEL ZONE F.A.B.-F.O.B. C/C PREPAID		BILL NO. FEVILLE/EMBALLAGE-B/L NUMBER A105024 A105024
A-SHIP TO:		VENDU A-SOLD TO: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY ON K6A 1K7		INFORMATION CRÉDIT-CREDIT INFORMATION Opéré par / Operated by: TRANSPORT TFI 5 SEC • NIR : R564638-6 19048584-1		ROUTE 01-NL-05/28 31-NL-05/25	
RÉACTIONS/LIVRAISON-DELIVERY NQ-E55353		INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.) <i>com</i>		IN: <i>kingsway</i>			
DESCRIPTION - ITEM 1 2500 RD 17CR-4NI RT SOL. TREATED COND A 3.80" GOLD		CERTIFICAT DE CONFORMITE See Packing Slip for English Certificate of Conformance M. Castle & Co. (Canada) Inc. certifie que la material fourni l'après ce document rencontrera et est conforme aux spécifications du produit(s) décrit(s) ci-contre. A.M. Castle & Co. (Canada) Inc.		INSTRUCTIONS TOL + 1/8" - Ø PRIOR DIST/ORD: 01 931733		COULÉE INFO-HEAT INFO QTE-QTY 69723 ✓ WHITE 20 A18SL4 GOLD 11 A18Z89 1 INSTRUCTIONS (CONT'D.) 32 x 3.825"	
POIDS POUR EXPEDITION SEULEMENT. VOIR FRACTURE POUR LE POID EXACT FRACTURE. SVP SIGNER ET JETER LA COPIE DU CHAUFFEUR POUR RÉCEPTION DU MATÉRIEL ET, SI VÉRIFIÉ, CERTIFICAT D'ANALYSE.				FORME-SHAPE I.A.C. 42470		ENT-WH	
DESCRIPTION - ITEM 2		INSTRUCTIONS		COULÉE INFO-HEAT INFO QTE-QTY		QTE/UNITE COM.-ORDERED PCES/PCOM-ORD POIDS COM.-WT. ORDERED 32 PCS PCS 286	
TERMES ET CONDITIONS PREPAID DES AVANTAGES GARANTIES ET RESTRICTION DE RESPONSABILITÉ AU VERSO		(1 Box)		INSTRUCTIONS (CONT'D.) <i>Handwritten signature</i> 31-5-07 325502		BALLOTS-BUNDLES PCES/PD EXP. SHIP. POIDS EXP.-WT. SHIPPED 1 32 286	
DESCRIPTION - ITEM 3 S / Métaux Castle 835 Selkirk Pointe-Clare, Que., H9R 3S2 306644 2		INSTRUCTIONS (1 Box)		COULÉE INFO-HEAT INFO QTE-QTY 286 #		QTE/UNITE COM.-ORDERED PCES/PCOM-ORD POIDS COM.-WT. ORDERED 32 PCS PCS 286	
NOTES DIFFÉRENCES COMMUNES DOIVENT ÊTRE INDICUÉS SUR LA COPIE RECUE LIVRAISON ET LA FEUILLE D'EMBALLAGE ET SIGNÉ PAR LE CLIENT. IL EST Également recommandé de noter les différences sur le bon de commande. Le client doit également indiquer si un crédit est requis.				INSTRUCTIONS (CONT'D.)		BALLOTS-BUNDLES PCES/PD EXP. SHIP. POIDS EXP.-WT. SHIPPED FORME-SHAPE I.A.C.	
NOM (LÉTTRE MOULÉE)-NAME (PRINT ONLY) RECUE PAR-RECEIVED BY		DATE RECUE- DATE RECEIVED				ENT-WH	
RECUE/LIVRAISON - DELIVERY RECEIPT END							

SP 425, 50-A



P.O. BOX 977
SYRACUSE
NEW YORK 13201

CERTIFICATE OF TEST

S
O
L
D
T
O

A H CASTLE, INC

3400 N WOLF RD
FRANKLIN PARK, IL 60131

S
H
I
P
T
O

A H CASTLE, INC

3400 N WOLF RD
FRANKLIN PARK, IL 60131

CUR ORDER NO.

PJ-17123-0-1

DATE

11 02 23-07

CUSTOMER ORDER # & DATE

01-23367

CUSTOMER REQ. #

DISTRICT

B PARSONS

SHIPPED
FROM

SYRACUSE

DESCRIPTION OF MATERIAL

SIZE

CRU 17-4PH RT A IAC 42470
AMC 3174-10 REV 7 ASME-SA564-04ED 1630 ASIN-AS64-04 1630
AMS-56430 (EX SURFACE) ATSI 630 UNS-B17400

CHEMICAL ANALYSIS

HEAT NO.

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CE	TO
A18564	.034	.68	.030	.018	.45	4.04	15.20	.11	3.13	.26	.10

CASTLE METALS FP
DATE REC'D 3/9/07 IAC 42470
APPROVED BY: *[Signature]*

MECHANICAL PROPERTIES

QUANTITY

HEAT NO.

1187 # A18564 TENSILE PSI YLD. 2X PSI ELONG 4D RED/AREA% HARDNESS
BHN 350
CAPABILITY PHYSICALS AFTER 500 DEG. F. - 1 HR. AIRCOOL:
205.660 160.840 12.6 53.3 BHN 410

MACRO TEST OK
FERRITE 3 %
MAGNAFLUX F/Y = 0/0

REDUCTION RATIO: 27.511
MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18510
MATERIAL INGOT CAST.
NAFTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
NO WELD REPAIR PERFORMED
MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT
MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF _____, 20

CERTIFIED
BY:

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.
CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

QUALITY ASSURANCE REPRESENTATIVE


 SYRACUSE
NEW YORK 13201

CERTIFICATE OF TEST

SOLD T O A M CASTLE, INC 3400 N WOLF RD FRANKLIN PARK, IL 60131	SHIP T O A M CASTLE, INC 3400 N WOLF RD FRANKLIN PARK, IL 60131	QU-1 ORDER NO. PS-17223-6-F DATE 03/14/07
---	---	--

CUSTOMER ORDER # & DATE

CUSTOMER REQ. #

DISTRICT

SHIPPED
FROM

SYRACUSE

01-21367

B. PARSONS

DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470

SIZE

3.250 RD

 AMC-3174-10 REV 7 ASME-SA564-04ED T630 ASTM-A564-04 T630
 AMS-5643Q (EX SURFACE) AISI 630 UNS# B17400

HEAT NO.

CHEMICAL ANALYSIS

A18289	C	MN	P	S	SI	NI	CR	MO	CU	CB	Ta
	.046	.50	.027	.021	.61	4.17	15.11	.14	3.38	.27	.009

CASTLE METALS CORP.

DATE RCVD 3-15-07

IAC 42470

APPROVED BY lv

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

678 # A18289	TENSILE PSI	YLD.2XPSI	XE LONG2IN	RED/AREA	HARDNESS
				BHN	363
CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:					
	204,770	179,850	13.8	52.6	BHN 412

MACRO TEST OK

FERRITE 3 %

MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 27.5:1

 MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
 AIRCOOLED.

 CRUCIBLE MATERIALS CORP. VENDOR #18610.
 MATERIAL INGOT CAST.

 MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
 NO WELD REPAIR PERFORMED
 MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT

MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

 THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORD
 WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE
 SPECIFICATION REQUIREMENTS.

 CRUCIBLE MATERIALS CORPORATION
 ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF _____, 20

NOTARY PUBLIC

CERTIFIED
BY:

QUALITY ASSURANCE REPRESENTATIVE

JACKIE L. WHITE - SPECIFICATION EXAMINER

CERTIFICATE OF TESTS

ABNAHMEPRUEFZEUGNIS

CERTIFICAT DE CONTROLE

CERT SERIAL# 000479979


TALLEY METALS
 A Carpenter Company

 Talley Metals Technology, Inc.
 P.O. Box 2498

Harrisville, SC 29551 Tel: 843.335.7540 Fax: 843.335.6465

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12/10/04

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKAUFER / VENDEUR PAGE 1 OF 2

 A.M. CASTLE & CO
 3400 N WOLF RD
 FRANKLIN PARK, IL 60131

HVL

CUSTOMER ORDER NO. / BESTELL-NR. / N° DE COMMANDE	CARPENTER NO. / WERKE-NR. / N° DE REFERENCE INTERNE	DATE / DATUM / DATE	WEIGH / GEWICHT / POIDS
01-28383-01	W67226	12/10/04	9153

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE:

G9723

 PRODUCT DESCRIPTION: TYPE 17-4 SOLUTION ANNEALED ROUGH TURNED
 PART NUMBER: IAC 42470

 SPECIFICATION: CASTLE 3174-10 CAP OF COND. H900 REV. 5 (02/18/04)
 AMS 5643 REV Q (01/ /03) (UNS S17400) (AISI 630)
 ASTM-A564-04
 ASME-SA564 2001 EDITION

SIZE 3.250000 IN. (82.55 MM) RD BAR

PRIMARY HEAT CHEMISTRY (WT%):

C	MN	SI	P	S	CF
0.03	0.84	0.48	0.019	0.026	15.32
NI	MO	CU	N	CB	PI
4.42	0.29	3.61	0.032	0.25	0.01
CB+TA					
0.26					

 THIS HEAT MELTED BY THE ARC/AOD PROCESSES
 NO WELD REPAIR.

 MATERIAL IS MANUFACTURED FREE FROM MERCURY, RADIUM AND ALPHA SOURCE
 CONTAMINATION.

DISCS MACROETCHED AND APPROVED

HARDNESS AS SHIPPED, HB - 321 (MIDRADIUS)

MAGNETIC PARTICLES: FREQUENCY = 0 / SEVERITY = 0

MICROSTRUCTURE - FERRITE 1.60%

CASTLE METALS FT

SOLUTION ANNEALED 1900 F - 1 HOUR - RAPID COOL

HOT REDUCTION RATIO: 8:1

MATERIAL WAS MELTED AND MANUFACTURED IN THE USA.

DATE REC'D 12.15.04 IAC 42470

APPROVED BY

CONTINUED ON NEXT PAGE

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CERTIFICATE OF TESTS

ABNAHMEPRUEFZEUGNIS

CERTIFICAT DE CONTROLE

CERT SERIAL# 000479979


TALLEY METALS
 A Carpenter Company

Talley Metals Technology, Inc.

P.O. Box 2496

Hartsville, SC 29551 Tel: 843.335.7540 Fax: 843.335.6465

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12/10/04

CUSTOMER/BESTELLER/CLIENT

SELLER/VERKAUFER/VENDEUR PAGE 2 OF 2

 A.M. CASTLE & CO
 3400 N WOLF RD
 FRANKLIN PARK, IL 60131

HVL

CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE REPONSE INTERNE	DATE/DAUM/DATE	WEIGHT/GEWICHT/POIDS
01-28383-01	W67226	12/10/04	9153

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE:

G9723

CAPABILITY

900 F(482 C), 01 HR

AIR COOL

YIELD STRENGTH, (0.20 %) KSI(MPA)	192.0(1324)
TENSILE STRENGTH, KSI(MPA)	202.0(1393)
ELONGATION IN 2.00", %	13.0
REDUCTION OF AREA, %	46.0
HARDNESS, HB	401.0

(CONVERTED FROM TENSILE STRENGTH)

 WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE
 PURCHASE ORDER AND SPECIFICATION REQUIREMENTS.

 TIMOTHY DUVALL
 QUALITY ASSURANCE REP.
 CARPENTER TECHNOLOGY CORPORATION

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Chris Provencal

From: David Shepherd [dshepherd@dartaero.com]
Sent: July 17, 2007 6:52 PM
To: 'Chris Provencal'
Cc: 'Marc Bellavance'
Subject: RE: NCR D2892 Support

Chris,

Thanks for your email.

I think the parts are acceptable.

I think the blank should be cut along the 2.541 ellipse so that the support does not pinch the tube, even if the part gets slightly stressed on installation.

I think this is the better way to go because the support is essentially non-structural.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Thursday, July 12, 2007 10:58 AM
To: '*David Shepherd (*David Shepherd)'
Cc: 'Marc Bellavance'
Subject: NCR D2892 Support

David,

I discussed this with you on the phone a few days ago. Qty(2) D2892-1 Supports: The turned blank got slightly crushed in the chuck. The attached picture shows the worst one (2.529 x 2.541 ellipse). The nominal OD should be 2.524 +0.010/-0.000. We can cut along the narrowest section, the support might pinch the tube because of the bigger OD in the other direction.

Additionally the overall length on one of them is short: 3.679" instead of 3.712".

-Chris

No virus found in this incoming message.

Checked by AVG Free Edition.

Version: 7.5.476 / Virus Database: 269.10.8/904 - Release Date: 7/16/2007 5:42 PM

No virus found in this outgoing message.

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